

§ 38.15-20

devices, shall be installed in these spaces. Electric motors shall be segregated from these spaces by a gastight bulkhead. Electric lighting of the explosion-proof type may be installed in these spaces provided all switching is done from outside the space.

(c) All cargo tanks, piping, valves, etc., shall be effectively grounded to the vessel's hull. Tanks with an insulated inner shell (primary barrier) shall have an effective grounding bond to the outer shell (secondary barrier) or to the vessel's hull.

(d) Electric submerged motor cargo pumps may be used, when in compliance with the following requirements and subject to approval by the Commandant.

(1) Design details of the submerged motor pump, with an evaluation of the cooling efficiency of the product being pumped, shall be submitted.

(2) Provisions shall be made to exclude air from the tanks containing cargo in either vapor or liquid phase. The pump motor shall be deenergized when this condition is not satisfied.

(3) A liquid level sensing device shall automatically shut down the motor and sound an alarm at a predetermined low liquid level. The alarm location may be the station from which cargo handling is controlled or such other location outside the cargo area as is acceptable to the Commandant.

(4) Details of the power cable, tank penetrations and pump connections shall be submitted.

(5) An auxiliary means of emptying the cargo tanks shall be provided in accordance with §38.10-10(d).

(6) Means for positively disconnecting the power supply between the switchboard and the pump power panel shall be provided, i.e., disconnect links, lockable breakers, etc.

(7) All materials used in the fabrication of the submerged motor cargo pumps shall be suitable for use with the liquid cargo at the design pressures and temperatures.

§ 38.15-20 Remote shutdowns—TB/ALL.

(a) All machinery associated with cargo loading, unloading, or cooling shall be capable of being shut down from a remote location. This location

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may be the station from which the cargo handling is controlled or such other location outside the cargo area as is acceptable to the Commandant.

(b) [Reserved]

Subpart 38.20—Venting and Ventilation

§ 38.20-1 Venting—T/ALL.

(a) Each safety relief valve installed on a cargo tank shall be connected to a branch vent of a venting system which shall be constructed so that the discharge of gas will be directed vertically upward to a point which shall extend to a height above the weather deck equal to at least one-third the beam of the vessel and to a minimum of at least 10 feet, and shall terminate at a comparable distance from any other living or working space, ventilator inlet, or source of vapor ignition. When special conditions will prevent the vent line header outlets being permanently installed at a height above the deck of one-third the beam of the vessel, then an adjustable system shall be provided which, when extended vertically, shall be capable of reaching a height of one-third the beam of the vessel.

(b) The capacity of branch vents or vent headers shall depend upon the number of cargo tanks connected to such branch or header as provided for in the Table 38.20-1(b), and upon the total safety relief valve discharge capacity.

TABLE 38.20-1(b)—CAPACITY OF BRANCH VENTS OR VENT HEADERS

Number of cargo tanks	Percent of total valve discharge
1 or 2	100
3	90
4	80
5	70
6 or more	60

(c) In addition to the requirements specified in paragraphs (a) and (b) of this section, the size of the branch vents or vent headers, shall be such that the back pressure in the relief valve discharge lines shall not be more than 10 percent of the safety relief valve setting. In nonpressure vessel vent systems, however, where the maximum back pressure of 10 percent of

the relief valve setting is insufficient to move the gases through any but an extremely large diameter vent pipe, the back pressure may exceed 10 percent provided:

(1) The pressure in the tank during venting does not exceed 120 percent of the tank maximum allowable pressure; and,

(2) The safety relief valve is sized to discharge the required capacity with the tank pressure and vent back pressure actually used.

(d) Return bends and restrictive pipe fittings are not permitted.

(e) Vents and headers shall be so installed as to prevent excessive stresses on safety relief valve mountings.

(f) The vent discharge riser shall be so located as to provide protection against mechanical injury and such discharge pipes shall be fitted with loose raincaps or other suitable means to prevent entrance of rain or snow.

(g) No valve of any type shall be fitted in the vent pipe between the safety relief valve and the vent outlets.

(h) Provisions shall be made to drain condensate from the vent header piping. Special precautions shall insure that condensate does not accumulate at or near the relief valves.

(i) Relief valves discharging liquid cargo shall not be connected to the branch vent or vent header lines from the cargo tanks. They may, however, be connected to an accumulator, the vapor space of which, may in turn, be connected to the vent header system. Relief valves in the cargo piping system may discharge back to the cargo tanks.

(j) Vapor discharged to the atmosphere in accordance with § 38.05-25(b) shall utilize valves separate from the safety relief valves.

§ 38.20-5 Venting—T/ALL.

(a) Safety relief valves on cargo tanks in barges may be connected to individual or common risers which shall extend to a reasonable height above the deck. An alternate arrangement consisting of a branch vent header system as required by § 38.20-1 may be installed. In any case, the provisions of § 38.20-1 (d) through (j) shall apply.

(b) Arrangements providing for venting cargo tanks at sea on unmanned

barges will be considered by the Commandant upon presentation of plans.

§ 38.20-10 Ventilation—T/ALL.

(a) A power ventilation system shall be provided for compartments containing pumps, compressors, pipes, control spaces, etc. connected with the cargo handling facilities. These compartments shall be ventilated in such a way as to remove vapors from points near the floor level or bilges, or other areas where vapor concentrations may be expected. The compartments shall be equipped with power ventilation of the exhaust type having capacity sufficient to effect a complete change of air in not more than 3 minutes equal to the volume of the compartment and associated trunks.

(b) The power ventilation units shall not produce a source of vapor ignition in either the compartment or the ventilation system associated with the compartment. Inlets to exhaust ducts shall be provided and located at points where concentrations of vapors may be expected. Ventilation from the weather deck shall be provided. Ventilation outlets shall terminate away from any openings to the interior part of the vessel a lateral distance at least equal to that specified in § 38.20-1(a). These outlets shall be so located as to minimize the possibility of recirculating contaminated air through the compartment.

(c) Means shall be provided for purging the following spaces of cargo vapors:

(1) The space surrounding nonpressure vessel type tanks, i.e., within the secondary barrier.

(2) The space surrounding pressure-vessel type tanks whose piping connections are below the weather deck in accordance with § 38.10-1(h).

(3) The space surrounding tanks whose manhole openings are below the weather deck in accordance with § 38.05-10(f).

(d) Power ventilation shall be provided for each auxiliary machinery or working space located on and accessible from the cargo handling deck. Such ventilation systems shall be designed to preclude the entry of cargo